Health of Riparian Areas in Southern Saskatchewan

Photo credit: Tracy Hansen

Saskatchewan has over 80,000 km of streamcourse.

RIPARIAN Areas

Saskatchewan's Green Treasures

Southern Saskatchewan is blessed with an abundance of land and water. Some of our most important treasures are the green areas which connect land and water. These transition zones between water and upland areas are called *riparian areas*. These are narrow, green strips of land bordering areas where water is usually plentiful, such as around lakes, rivers, streams, and potholes. Healthy riparian areas are often able to support unique plant communities made up of shrubs, trees, grasses, sedges, rushes, and forbs. These important areas provide clean water, forage and wildlife habitat.

How do we measure if a riparian area is healthy or not?

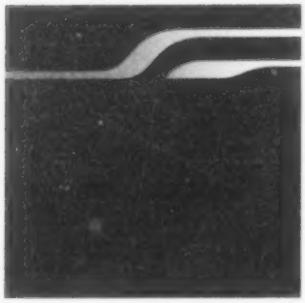
A healthy riparian area is one which performs the essential functions of filtration and sediment trapping, ground water recharge, biomass production and energy dissipation (slowing water). These functions provide clean, abundant water and vital wildlife habitat. Sixteen vegetation, soil and hydrology attributes are used to assess the ability of riparian areas to perform these essential functions.

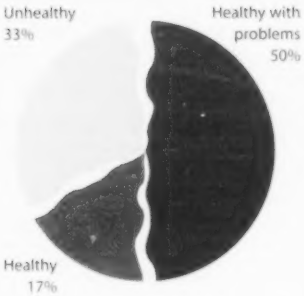
During a riparian health assessment, values are assigned to each of these variables by someone trained in the technique. Riparian areas are then classified as healthy, healthy with problems, or unhealthy.

A healthy riparian area performs all of its functions and is considered to be stable. A riparian area that is healthy with problems performs many functions, but signs of degradation are visible. An unhealthy riparian area has lost most of its ability to perform its functions and is now considered to be degraded. Riparian assessments can also help us key in on the parts of the riparian ecosystem that need attention.

ACT sheet

Photo credit: Cari-Lynn Epp





Healthy lotic riparian areas in Saskatchewan

Health of Riparian Areas in Southern Saskatchewan

How is Saskatchewan doing?

Lotic Riparian areas

Riparian areas that contain flowing water are called ***lotic riparian areas***. In Saskatchewan, there are over 80,000 km of stream course including rivers, creeks and intermittent streams. Approximately 42 percent of lotic riparian areas in southern Saskatchewan are used for grazing.

The Saskatchewan Watershed Authority conducted assessments of approximately 830 riparian areas across southern Saskatchewan from 1996–2002. Eighty three percent of these riparian areas were less than healthy.

The primary problems with lotic riparian health were:

Vegetation

Healthy riparian areas are usually lined with abundant, woody vegetation and wetland plants such as sedges and bulrushes. Woody vegetation is an important attribute of riparian areas in Saskatchewan. In particular, tall shrubs such as willows, chokecherry or dogwood have deep, binding roots that hold soil together and prevent erosion and bank alteration. Woody vegetation can die out when overgrazed or when the water table is altered. Forty six percent of streams had a heavy or moderate amount of browsing. As a result only 39 percent of streams had a less than healthy balance of dead or decadent (partially dead) wood and live trees and shrubs. When woody species die out, new seedlings are needed to replace the old shrubs. Fifty two percent of sites had little tree or shrub establishment and regeneration.

Herbaceous (non-woody) vegetation along riparian areas is also very important. Typical riparian plants such sedges and rushes can become replaced with less desirable plants called disturbance species. Disturbance species generally have shallow root systems and cannot function to prevent soil and bank loss. Seventy five percent of riparian areas had disturbance species such as Kentucky blue grass, smooth brome and sow thistle. Also of concern are many noxious weeds which tend to invade and take over riparian areas. These invasive species such as Canada thistle or leafy spurge were found on 54 percent of sites.

Soils

A healthy riparian area is one in which soils are protected to prevent erosion and sedimentation. Stable soil and bank structure will allow water to slow and deposition of sediment to occur. This further builds the banks along a stream. Vegetative cover across the entire floodplain is important to protect soils during flood events. A less than healthy vegetative cover of the flood plain was found on 63 percent of sites. Fifty one percent of sites had a less than healthy amount of vegetation to hold banks together. Finally, the total amount of bareground in the riparian area is a good indicator for the potential for erosion. Bareground was a concern on 31 percent of sites.

Health of Riparian Areas in Southern Saskatchewan

Photo credit: Tom Harrison

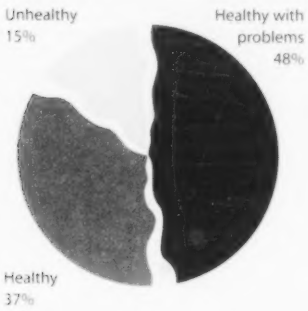
Disturbance species are unable to prevent soil and bank loss.

Hydrology

A healthy riparian area is one which can perform the essential functions of flooding, slowing of water and ground water recharge. When a system has down cut and has a reduced ability to flood out of its banks the creek is said to be incised. Seventy four percent of streams and rivers had some degree of incisement. Water management, bank instability and channelization can cause this problem. Another important indicator of a healthy riparian area is the balance between erosion and deposition. Creeks and rivers naturally cut on the outside edge of curves and deposit on the inside of curves. If a greater proportion of the creeks are laterally cutting, excess sediment is being added to the system resulting in a decrease in water quality. Seventy percent of streams showed excess lateral cutting.

Lentic riparian areas

Riparian areas that contain still water are called lentic riparian areas. There are approximately 1.5 million wetlands in the province which works out to about 4.5 million acres of water (this is dependent on many different factors such as water availability and may vary from year to year). It has been estimated that 40 percent of wetlands have been lost since settlement. The Saskatchewan Watershed Authority has conducted 544 lentic (still water) assessments concentrating on the Missouri Couteau and large saline wetlands. Sixty three percent of lentic areas were in less than healthy condition.



Health of lentic riparian areas in Saskatchewan

The primary problems with lentic riparian health were:

Vegetation

A healthy lentic riparian area also will have abundant woody vegetation and wetland type species. Dead and decadent woody species were of concern in 48 percent of sites. Disturbances such as excess browsing, flooding or disease can reduce the amount of woody vegetation over time. Eighty one percent of lentic riparian areas had at least moderate utilization of trees and shrubs and 71 percent of sites had little regeneration or new seedlings.

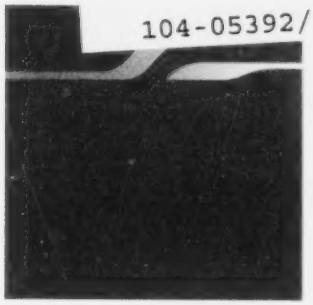
Disturbance and undesirable herbaceous species are a common problem in lentic riparian areas. Events such as overgrazing, cultivation and flooding can allow species to establish which are shallow rooted, poor soil binding and unpalatable. Seventy five percent of riparian areas had undesirable species such as Kentucky bluegrass, foxtail barley or sow thistle. Noxious invasive species such as Canada thistle were found on 41 percent of all sites.

Soils

A healthy riparian area is one in which soils are protected to prevent erosion and sedimentation. Vegetative cover across the riparian area is important to help filter water and reduce erosion. A less than healthy vegetative cover of the riparian area was found on 50 percent of sites. Twenty three percent of sites had a less than healthy shoreline root mass protection. Bareground may be caused by human disturbances such as vehicle traffic or cultivation. Human caused bareground was a concern on 35 percent of sites. Finally, wetlands have a particular kind of disturbance called pugs and hummocks where cattle traffic creates a mounded area. Pugs and hummocks were a problem on 50 percent of sites.

Hydrology

Hydrology is very important to lentic riparian areas. Many wetlands recharge shallow groundwater aquifers and provide moisture for abundant biomass production. If the hydrology of these areas are altered, these functions can be lost. The most common disturbance of wetland hydrology is artificial drawdown from drainage. Only five percent of sites showed some level of artificial drawdown however, a great many more than this have been drained since settlement.



A healthy riparian area is one in which soils are protected to prevent erosion and sedimentation.

Incised rivers are unable to reach their floodplain.

Photo credit: Tracy Harrison

What does this all mean?

Several key areas need to be addressed to improve riparian health.

Grazing management

The disappearance of woody vegetation and soil disturbance can often be the result of cattle overgrazing. Improved grazing management can improve riparian health. Cattle producers throughout Saskatchewan are working to improve riparian health using tools such as deferred grazing, improving distribution, alternative water sources and by providing rest during the growing season.

Water management

Traditional water management activities such as channel clearing, drainage and channelization can lead to altered hydrological conditions. Water management activities can often be altered to accommodate both riparian health and other activities.

Photo credit: Tracy Harrison

Ecologists, landowners and the general public can work together to improve and maintain riparian areas.

Summary

A large percentage of Saskatchewan's riparian areas are in need of some form of improvement. The good news is that a relatively small change in management with monitoring could improve a large percentage of areas currently rated as "healthly with problems" to "healthy." Ecologists, landowners and the general public will need to continue to work together to understand and maintain this important resource.

FACT sheet

For Further Information

A bibliography of the resources used to prepare this factsheet is available from the Saskatchewan Watershed Authority. Factsheets on other topics are also available.

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